

MISCELLANEOUS.

CHRISTIAN GOTTFRIED EHRENBERG*.

AMONG the men whose names will ever be associated with the history of science, Ehrenberg occupies a very prominent place. Fifty years ago he boldly penetrated into Africa as far as Abyssinia in the face of difficulties of which we can now scarcely form any idea, collecting zoological and botanical materials, whilst the fanaticism of the inhabitants followed the Christian wherever he went, and more than once placed him in peril of his life. The results of these travels led him to the department of science the investigation of which constituted the principal labour of his life, and especially contributed to his scientific fame, namely the study of the lower forms of animal life, and especially the world of microscopic organisms, whose richness and variety were previously unsuspected. And it was not only to the living forms that Ehrenberg devoted his attention; he also demonstrated their wide diffusion in the rocks of former periods of the earth's history, and became the founder of microscopic palæontology, which has been of essential aid to the geology of the sedimentary rocks. With the greatest care the objects of numerous observations were united by him into a collection which is unique in its kind, and which will remain at once as an important aid to study and as a monument of the indefatigable industry of a German savant.

Ehrenberg was born on the 19th April, 1795, at Delitzsch in the province of Saxony. Up to his fourteenth year he attended the school of his native place; in 1810 he obtained a free scholarship in the Pforta Academy, where he had several men of note (as, for example, Leopold von Ranke) among his associates; and he left this institution in 1815 to study theology at Leipzig, in accordance with his father's wish. But even in the midst of his classical studies at the Academy, he had already devoted his hours of leisure to investigations in natural history; and this bent of his mind led him when he had been a year at the University, to exchange the study of theology for that of medicine. He completed his academic studies in Berlin, where he attained his degree of Doctor of Medicine on the 5th November, 1818, his inaugural dissertation bearing the title "*Sylvæ mycologicæ Berolinenses.*"

In the two following years we find the young doctor engaged with his friend Hemprich in sketching plans for a great journey of investigation to some distant part of the earth; and the wishes of both of them were fulfilled in the year 1820, when General von Minutoli, who was on the point of starting on an antiquarian journey into Egypt, requested the Berlin Academy of Sciences to recommend him two young naturalists as companions. The Academy selected Ehrenberg and Hemprich. Their journey in common extended into the Libyan desert as far as the oasis of Jupiter Ammon (Siwah); but after their

* [For the original of this notice we are indebted to the kindness of Prof. C. Rammelsberg.—Eds.]

return to Alexandria, the two naturalists quitted the General's expedition in order to carry on natural-history investigations on their own account. They traced the Nile upwards as far as Embukohl in Dongola, made an excursion into the Fayoom, returned to Cairo in 1823, and then examined the northern coasts of the Red Sea and especially the Sinaitic mountains. While Hemprich conveyed the collections they had made to Alexandria, and remained in that city awaiting remittances, Ehrenberg remained for six months in Tor, occupying himself principally with the corals of the Red Sea.

The two naturalists afterwards undertook a third journey, into Syria and Cœlosyria; they penetrated as far as Baalbec, and reached the snowy summits of Lebanon. Their further journey was commenced in 1825; it carried them through Arabia to Loheia and across to Massowa on the Abyssinian coast. Here Hemprich fell a victim to fever; and his friend committed him to the grave on the small island of Toalut. Ehrenberg then made an excursion to the hot springs of Eilet, and returned by Kosseir and Alexandria to Europe in 1826. During the six years of his absence he lost nine of his European companions by death. In the Memoirs of the Berlin Academy for the year 1826, Alexander von Humboldt gave a preliminary report upon these great travels and the important collections which had reached Berlin through Ehrenberg and Hemprich.

In the year 1827 Ehrenberg was made an Extraordinary Professor in the University of Berlin, and on the application of Alexander von Humboldt obtained, through the minister Von Altenstein, the means of making known the scientific results of his travels. In consequence of this, two volumes of '*Symbolæ physicæ*,' with copperplates representing mammals, birds, insects, &c., appeared in the years 1828-1834. Unfortunately circumstances were unfavourable to a continuation of the work.

A short historical sketch of the first part of his travels appeared in 1828 under the title "*Naturgeschichtliche Reisen durch Nordafrika und Westasien in den Jahren 1820-26, von Hemprich und Ehrenberg.*" In 1827, Ehrenberg had already published a description of the deserts in the Memoirs of the Academy. He also published some of his observations upon various subjects in different periodicals, *e. g.* on the Manna of the Tamarisks, on the Scorpions and their geographical distribution, on the Monkeys of Sennaar and Kordofan, on the peculiar noise heard on Djebel Nakuss among the mountains of Sinai, and on the Corals and *Acalephæ* of the Red Sea.

The journey to the Ural and the Altai and to the Chinese frontier, undertaken in 1829 by Alexander von Humboldt at the desire of the Emperor Nicholas, principally for the purpose of bringing to light the mineral riches of the Russian empire, has been well described by Gustav Rose, who, with Ehrenberg, accompanied Humboldt.

On his return, Ehrenberg devoted himself exclusively to microscopical researches; and in 1830 he published a memoir on the organization, classification, and geographical distribution of the Infusoria, of which Cuvier speaks as follows in the '*Analyse des travaux de l'Académie Royale de Paris*:'—"This discovery entirely changes

our ideas, and especially upsets many systems; it is one of those which constitute epochs in the sciences." This memoir was followed by contributions which were continued until the year 1835. In 1838 appeared the great work 'Die Infusionsthierchen als vollendete Organismen,' with 64 plates, for which and for his geological researches the Geological Society conferred upon Ehrenberg the Wollaston medal as a special distinction. As early as 1836, Ehrenberg had discovered that the polishing-powder known as tripoli abounded in fossil organisms, and that the polishing-slate of Bilin, near Teplitz, contained innumerable siliceous shells of similar creatures. The same result was obtained by the microscopic examination of the so-called "edible earths" from various localities. This occurrence of fossil organisms was soon afterwards demonstrated by Ehrenberg in older formations, as is evidenced by his memoirs 'Die Bildung des europäischen, libyschen und uralischen Kreidefelsens und Kreidemergels aus mikroskopischen Organismen' (1839), and 'Ueber noch jetzt zahlreich lebenden Thierarten der Kreidebildung und den Organismus der Polythalamien.' In the year 1841 he demonstrated the presence of organisms in the peat-beds in various parts of Berlin (Museum, Friedrichsstrasse, and Karlsstrasse), and gave an impulse to the technical employment of these, and of the Infusorial earth of Ebstorf in the Lüneburger Haide, as, according to the reports of old writers, an earth serving for polishing-purposes could be used for the manufacture of light building-stones, capable of floating upon the water, and the dome of the mosque of Saint Sophia, the celebrated structure of the Emperor Justinian, is composed of such stones. With the hearty cooperation of the then director of the Royal Porcelain Factory, the Mining Privy Councillor Frick, Ehrenberg had stones manufactured from the Berlin material, which proved from their porous nature to be very useful, and were employed by the architect Hoffmann in the construction of the cupola of the museum.

In 1845, at the request of the Mining Department, Ehrenberg made investigations on the diffusion of the infusorial tufts in the Eifel; in 1847 he published his "Beobachtungen über Passatstaub und Blutregen," in the Memoirs of the Academy of Berlin; and this was followed by a long series of papers in the 'Monatsberichte.' In 1840 he had prepared his 'Microgeologie,' which appeared in 1854, with 41 copperplates. The first part of a continuation of this work, relating specially to America, appeared in 1856.

A new field is opened by his works on the Greensand and the illustrations of its organic life (1855), and his communications on the gradually advancing knowledge of immense quantities of microscopic organic forms in the lowest Silurian deposits near Saint Petersburg (1852-62). His attention also was vividly excited by the recent investigations of the sea-bottom; so that, by the receipt of samples of soundings from the most different regions, he was enabled to investigate thoroughly the microscopic organisms of the depths of the sea. In 1872 he published a revision of these, illustrated with 12 plates, which was followed in 1875 by a work on "die fossilen Erd- und

Felsproben des Meeres und Süßwassers aller Länder, und die Polycistinen-Mergels von Barbados" (with 30 plates). Thus, nearly to the close of his long life, which took place on the 27th June in the year just closed, he showed no relaxation in his activity.

From the year 1839 Ehrenberg was an Ordinary Professor in the Faculty of Medicine. From 1842 he was Secretary of the Physico-mathematical Class of the Academy of Sciences, of which he had been a member since 1827. In 1839 king Friedrich Wilhelm III. conferred upon him the great gold medal for Art and Science; and at the same time the Crown Prince gave him a gold medal relating specially to Ehrenberg's discoveries; the Civil Class of the order "Pour le mérite" counted him as one of its members from the time of its establishment by king Friedrich Wilhelm IV.; and foreign honours were not wanting in recognition of his scientific merits.

Quite in the evening of his life he was gratified by the receipt of the large gold medal founded by the Dutch Academy of Sciences at Amsterdam in honour of Leeuwenhoek, the discoverer of the Infusoria, and conferred for the first time unanimously upon Ehrenberg.

Corals in the Hunterian Museum figured by Ellis and Solander.

To the Editors of the Annals and Magazine of Natural History.

GENTLEMEN.—In rearranging the corals in the Hunterian Museum I recognized the nineteen specimens mentioned in the following list as figured in Ellis and Solander's work. Doubtless more of the Hunterian specimens are figured in that work; but I have only given those which have some characteristic feature admitting of certain identification. Moreover Ellis selected for illustration parts only of some of the bulkier specimens. The list, however, as it stands, will not be without interest to those who desire that the location of type specimens should be known.

I am, Gentlemen,

Yours obediently,

JOHN YOUNG, M.D.

Glasgow University, Nov. 1876.

List of Specimens in Hunterian Museum figured in Ellis and Solander's 'Natural History of Zoophytes.'

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| <p>1. Pl. 29. <i>Madrepora anthophylites</i>.</p> <p>2. Pl. 32. fig. 1. ?</p> <p>3. Pl. 35. <i>M. carduus</i>.</p> <p>4. Pl. 34. <i>M. angulosa</i>.</p> <p>5. Pl. 38. <i>M. ramea</i>.</p> <p>6. Pl. 39. <i>M. aspera</i>.</p> <p>7. Pl. 40. <i>M. undata</i>.</p> <p>8. Pl. 41. figs. 1, 2. <i>M. ampliata</i>.</p> <p>9. Pl. 43. <i>M. cinerascens</i>.</p> <p>10. Pl. 45. <i>M. pileus</i>.</p> | <p>11. Pl. 46. fig. 1. <i>Madrepora dædalea</i>.</p> <p>12. } Pl. 47. figs. 4, 5. <i>M. arcolata</i>.</p> <p>13. } Pl. 48. fig. 2. <i>M. phrygia</i>.</p> <p>14. Pl. 50. fig. 2. <i>M. abdita</i>.</p> <p>15. Pl. 52. <i>M. foliosa</i>.</p> <p>16. } Pl. 53. fig. 1. <i>M. annulosa</i>.</p> <p style="padding-left: 2em;">figs. 5, 6. <i>M. foveolata</i>.</p> <p>17. Pl. 55. <i>M. rotulosa</i>.</p> <p>18. Pl. 56. <i>M. interstincta</i>.</p> <p>19. Pl. 57. <i>M. muricata</i>.</p> |
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